

## TIE DOWN STRAP GUIDE

1. This application claims priority to U.S. provisional application number 60/409,622, filed on September 10, 2002.

### CROSS REFERENCE TO OTHER PATENTS

	Patent Number	Inventor	Title
1)	4,155,537	Bronson et al.	Adjustable Length Strap Tie Down Apparatus
2)	4,268,012	Ruehle et al.	Adjustable Length Strap Tie Down Apparatus
3)	6,199,412	Kennedy	Lockable Tie Down Strap
4)	3,175,806	Prete, Jr.	Ratchet Buckle
5)	4,199,182	Sunesson	Device Arranged to Tighten an to Lock Slings or Load Fastening Belts
6)	4,823,443	Waters	Strap Tie Down Device and Method for Its Use
7)	6,195,848	Jackson et al	Slideable Ratchet Tensioning Device and Tie Down Assembly
8)	5,845,370	Cohoon	Self Positioning Tie Down Strap

### BACKGROUND OF THE INVENTION

2. Prior inventions related to the design of a ratchet mechanism, the strap and methods of attaching the strap to the secured item. These inventions did not include any mechanism for securing the strap when not in use. Therefore, when the strap is not in use, the strap becomes entangled with other straps or tied into knots. This mechanism allows for coiling or wrapping the unsecured strap in a secure position.

## BRIEF SUMMARY OF INVENTION

3. The invention utilized a brachet that can either be attached to a tie down strap ratchet or incorporated in the original manufacture of the ratchet. This invention utilizes a U shaped guide that allows for the strap to be coiled or wrapped around the ratchet when not used. This alleviates the problem of the strap becoming tangled and tied in knots when not used.

4. The present invention is a tie down strap and more particularly a tie down strap with a mechanism for maintaining the strap in a coiled position about the ratchet when in storage.

## DESCRIPTION OF THE DRAWINGS

5. Figure 1 is a perspective view showing a ratchet and straps without the guide; Figure 2 is a perspective view showing a pair of guides jointed to the ratchet with straps; Figure 3 is side view showing a pair of guides jointed to the ratchet with straps; and Figure 4 is a top view of a guide.

## DETAILED DESCRIPTION

6. The tie down strap 10 is provided with a ratchet 12, strap 20, and at least one guide 40. The ratchet 12 in use allows the strap 20 to be adjusted in length such that the tie down strap can be adjusted to fit different sized loads. The ratchet 12 is stored, when not in use, via coiling the strap 20 about the ratchet 12 in a coiled or circular pattern. The guide(s) 40

provide a groove 52 into which the strap 20 may be coiled and retained to avoid unintended uncoiling of the strap 20. Each of the components will be discussed in serial fashion.

7. The ratchet 12, commercially, comes in a variety of different sizes and shapes. Different ratchets 12 are shown in Figures 1-3 and others may be found in stores. A ratchet 12 provides a mechanism for lengthening and shorting the strap 20, adjusting the tie down strap to the size and shape of the strap 20 to the situation. Such ratchet 12 includes a first end 14 and a second end 16. The first end 14 of the ratchet 12 may be joined, perhaps slidable, to the first end 24 of the first elongate portion 22 of the strap 20. The second end 16 of the ratchet 12 may be joined, perhaps slidably, to the first end 28 of the second elongate portion 20 of the strap 20. The second ends 27, 29 of the first and second elongate portions 22, 24 of the strap 20 are typically joined to S-hooks 30 as shown in Figure 1.

8. The strap 20, preferably made of mylon, may be a single piece or may have a first elongate portion 22 and a second elongate portion 26, depending upon the structure of the ratchet 12. In a multi-piece strap 20, the first elongate portion 22 is typically permanently joined adjacent the first end 14 of the ratchet 12. The second elongate portion 26 is coiled inside the ratchet 12 to shorten and uncoils to lengthen the strap 20 to the preferred length for a given use.

9. At least one guide 40 may be permanently, selectively or homogeneously joined to the ratchet 12. Suitable attachment

mechanisms include hook and loop fabric, adhesive, welding, fasteners, and other permanent and selective fasteners known in the art of fastening. A preferred fastener that may be used with ratchets 12 that have an appropriately shaped end 14 or 16 is a snap fit with a slot 54 defined in the guide 40 as shown in Figure 4.

10. The guide 40 may include a first elongate 44 and a second elongate 48 cooperatively defining a groove 52. The groove 52 is desired to be of sufficient size such that the strap 20 fits, preferable snugly, within the groove 52 when the strap 20 is wrapped about the ratchet 12. The groove 52 should also be of sufficient depth that each coil, when fully coiled, is retained within the groove 52, since coils outside the groove 52 tend to unwind into a mess. That is, as the strap 20 is wrapped about the ratchet 12, each coil passes through the groove 52, holding all the coils in a stacked or restricted position. Different sized guides 40 may be used with different width straps 20.

11. A mechanism 60 for selectively retaining the strap 20 within the groove 52 may be in operable communication with the guide 40. A variety of mechanisms 60 may be employed including selectively lockable gates, squeeze fit of the strap 20 within the groove 52, elastomeric bands disposed about the coiled strap 20, or retention points 46,50. Retention points 46,50 are preferred as they can be molded or formed into the guides 40 with little to no additional manufacturing cost and such retention points 46,50 remain with the guide 40 at all times. Retention points 46,50

may be joined to the first and second elongate portions 44,48 respectively. Such points 46,50 define a smaller mouth 62 to the groove 52 than the width of the strap 20 such that the relative rigidity of the strap 20 retains the strap 20 within the groove 52.

12. Although the present invention has been described with reference to preferred embodiment, workers skilled in the art will recognize changes may be made in form and detail without departing from the spirit and scope of the invention.

## PART NUMBERS

- 10. Tie Down
- 12. Ratchet
- 14. First End
- 16. Second End
- 20. Strap
- 22. First Length
- 24. First End
- 26. Second Length
- 27. Second End
- 28. First End
- 29. Second End
- 30. S-Hooks
- 40. Guide
- 42. Securement Mechanism
- 44. First Elongate
- 46. Retention Point
- 48. Second Elongate
- 50. Retention Point
- 52. Groove
- 54. Slot
- 60. Mechanism for Retaining Strap
- 62. Smaller Mouth